

PREPRODUCTION INITIATIVE-NELP VACUUM-ASSISTED SANDING SYSTEM TEST PLAN

SITE: FTSC NORFOLK

1.0 OBJECTIVE

This test plan describes the data collection procedure for the vacuum-assisted sanding system. The data will be used to determine the efficiency, effectiveness, and overall success of the system in removing paint without exposing workers to lead and other heavy metals that would normally be released during conventional hand sanding methods. The vacuum-assisted sanding system's expected benefit is the containment of paint waste, which will allow the waste to be handled appropriately. The system will minimize environmental impact and worker hazards.

2.0 EQUIPMENT DESCRIPTION

Currently, the site removes paint by sanding equipment by hand. This process is time-consuming and releases paint dust into the environment.

The vacuum-assisted sanding system consists of a vacuum cleaner with vacuum assist sanders. These components eliminate airborne dust that contains toxins—including lead, chromium, and other particulate matter from both metallic and non-metallic aircraft structures. The vacuum system incorporates a three-stage filtration system that includes a filter bag, a pre-filter, and a HEPA filter. The system includes:

- a Clayton vacuum cleaner that can operate two tools simultaneously through the use of a Y adapter
- Dynabrade orbital palm sanders, jitterbug sanders, in-line power sanders, and belt sanders.

The tools will be tested as both central vacuum-ready (to be used with the Clayton vacuum system) and as self-generated, vacuum-assisted. Central vacuum-ready tools attach directly to a standard vacuum cleaner; the self-generated, vacuum-assisted tools contain a pneumatic vacuum system in the tool itself and require only compressed air for operation. The implementation requirements are 115 volts, 15 amp for the central vacuum system and compressed air for the self-generated, vacuum-assisted tools.

3.0 TEST PLAN

This test plan will be used to evaluate the effectiveness of the vacuum-assisted sanding system in reducing worker exposure to paint particulate and heavy metals and in eliminating paint waste released to the environment. The financial return on investment is expected to be realized through a reduction in labor hours.

3.1 Approach

Quantitative and qualitative data will be acquired via the completion of Tables 1a and 1b. An industrial hygienist will be retained to measure the dust particulate and paint contaminants in the breathable air both before and after implementation of the vacuum-assisted tools.

3.1.1 Instructions for Completing Tables

- **Operational Data—Table 1a**

- **Date:** Indicate dates the vacuum-assisted sanding system was used.
- **Equipment Identification:** Indicate the identification number of the equipment being stripped or provide a brief description.
- **Sander Used:** Indicate whether self-generated vacuum-assisted or central-vacuum-ready sanding tools were used.
- **Area Sanded:** Indicate the square footage of equipment surface which was stripped on a given date.
- **Layers of Paint:** Indicate how many layers of paint were stripped from the equipment, if known.
- **Time/Task:** Record the time spent (in man-hours) to sand the equipment on the given date.
- **Waste Volume:** Indicate the volume of hazardous waste disposed of. [This information need only be provided when the waste is actually disposed of. Sanding may or may not have occurred on the same date.]

- **Consumables—Table 1b**

- **Date:** Indicate the date consumables were ordered.
- **Item:** Record the specific consumable requiring replacement (*e.g.*, air tool oil, pads, vacuum filters, etc.). Provide the part number and description, if available.
- **Quantity:** Record the amount of each consumable requiring replacement.
- **Cost:** Record the cost of each consumable.

- **Downtime/Month—Table 1b**

- **Time Period:** Record periods greater than one day when the system was not in use.

- **Reason:** Explain whether downtime was due to repairs, maintenance, workload, or other factors.
- **Repairs—Table 1b**
 - **Time:** Indicate the time required to repair the system.
 - **Parts:** List repair parts required and the cost of those parts.
- **Qualitative Assessment:** Provide a narrative evaluation of the capabilities of the vacuum-assisted sanding system. Briefly discuss:
 - any damage to the substrate that resulted from the vacuum-assisted sanding system
 - efficiency and cost-effectiveness of the unit
 - operator preference between the self-generated, vacuum-assisted tools and the central vacuum-ready models; include the advantages and disadvantages of each
 - ease of use and the unit's ability to successfully interface with site operations
 - which tools were especially well-suited for sanding certain types of substrate shapes and materials.

4.0 REPORTING

The data entry forms are a concise method of data collection. Data will be collected for 1 year. During this time, periodic status reports on the testing will be submitted to NAWCADLKE. The final report will include detailed results and observations, assess the efficiency and cost-effectiveness of the unit, and evaluate its ability to interface with site operations.

Table 1a
Operational Data

[illegible]

Table 1b

Consumables

Date	Item		Quantity	Cost
	Number	Description		

Downtime

Repairs

Time Period	Reason		Time	Parts

Qualitative Assessment*:

Please comment on the effectiveness and efficiency of the unit.

* Attach additional sheet if need

